Taiwania, **40**(2): 183-191. 1995

Biochemical Properties of Sweet Potato RNases

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(Manuscript received 4 March 1995; accepted 17 June 1995)

ABSTRACT: Six groups of ribonucleases (RNases) activities from Sweet potato (*Ipomoea batatas* Lam. Cv. Tainong 57) leaves were identified and characterized by an RNA-cast polyacrylamide gel. Among these ribonucleases, five were major isoforms, and were designated to A-E groups, ranged in size from 14 to 47 kilodalton. They were consistently expressed in root, stem and leaf. In addition, a novel RNase isoform, designated F group, with a molecular mass about 6000 dalton, expressed specifically in the aging leaf. In this paper the biochemical properties of six groups RNase isoforms were characterized with catalytic ions, pH value, denaturing reagent of SDS and 2-mercaptoethanol.

KEYWORDS: Sweet potato, RNase, *Ipomoea batatas,* s-RNase.

INTRODUCTION

Ribonucleases (RNases) play a classical function in the processing of targeted RNA molecules (Green, 1994). In plant, more recently data showed that ribonuclease activity is associated with many phases of plant development. Among them, senescence is the most prominent process that influence the RNase content. In wheat leaves, there are three RNases, WHA, WHB and WHC increasing during the senescent state (Blank and Mckeon, 19911). Studies of the expression of the gene for RNS2 (a member of RNase group in *A. thaliana*) also showed that the S-RNase homolog proteins with sequence homologous to those of S-RNase group in *Arabidopsis thaliana* is a senescence-induced RNase (Taylor and Green, 1991). Accumulated data implied that some RNase activities may closely correlate with the physiology of plant senescent state. Our experiments showed that six groups RNase isoforms are present in sweet potato tissue. All of them are variable in qualitative and quantitative level, while the plant developments are under various environmental conditions. Especially in leaf senescent state, only some specific RNases appeared. In this paper, we present the biochemical properties of these RNases isoforms performed by substrate-based gel assay method(Blank, et al., 1982). This work is the first step to further purify RNase proteins.

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